Complete Summary

GUIDELINE TITLE

Nursing management of hearing impairment in nursing facility residents.

BIBLIOGRAPHIC SOURCE(S)

Adams-Wendling L, Pimple C. Nursing management of hearing impairment in nursing facility residents. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; 2007 Jun. 56 p. [172 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Hearing impairment

GUIDELINE CATEGORY

Evaluation
Management
Screening
Treatment

CLINICAL SPECIALTY

Geriatrics
Nursing
Otolaryngology

INTENDED USERS

Advanced Practice Nurses
Nurses

GUIDELINE OBJECTIVE(S)

To provide guidelines for nursing care of nursing facility residents with hearing impairments

TARGET POPULATION

Nursing facility residents with hearing impairments

INTERVENTIONS AND PRACTICES CONSIDERED

1. Screening of all residents for hearing impairment including history, physical examination, self-report evaluation, physiologic evaluation
2. Referral to primary care provider, ear, nose and throat (ENT), and/or audiologist
3. Intervention strategies including effective communication and the management of hearing aids and listening devices
4. Cerumen management including ceruminolytic agents, aural lavage/irrigation, and curette

MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of screening tools
- Functional ability
- Quality of life

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Evidence Grading

A. Evidence from well-designed meta-analysis
B. Evidence from well-designed controlled trials, both randomized and nonrandomized, with results that consistently support a specific action (e.g., assessment, intervention or treatment)
C. Evidence from observational studies (e.g., correlational descriptive studies) or controlled trials with inconsistent results
D. Evidence from expert opinion or multiple case reports

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Internal review was performed at Research Translation and Dissemination Core (RTDC) and by two external expert content reviewers.

This guideline was reviewed by experts knowledgeable of research on hearing impairment in elders and development of guidelines. The reviewers suggested additional evidence for selected actions, inclusion of additional practice

recommendations, and changes in the guideline presentation to enhance its clinical utility.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The grades of evidence (A-D) are defined at the end of the "Major Recommendations" field.

Individuals at Risk for Hearing Impairment

The following are risk factors associated with hearing impairment:

- Greater than 65 years of age (Hopper et al, 2001; Lindblade & McDonald, 1995; Mayo Clinic, "Hearing loss and risk factors," 2003; Pearson et al., 1995). (*Evidence Grade = C*)
- Residing in nursing facilities (Corbin et al., 1984; Lewsen & Cashman, 1997; Schow & Nerbonne, 1980; Wallhagen, Pettengill, & Whiteside, 2006). (*Evidence Grade = C*)
- Cognitive decline (Bess et al., 1989; Cacchione et al., 2003; Palmer et al., 1998; Peters, Potter, & Scholer, 1988; Strouse, Hall, & Burger, 1995; Uhlmann et al., 1989). (*Evidence Grade = C*)
- Visual impairments and disturbances (Bagley, 1995; Crews & Campbell, 2004; Klein et al., 1998; Rudberg et al., 1993). (*Evidence Grade = C*)
- Chronic otitis media (Kennedy-Malone, Fletcher, & Plank, 2004; Yueh et al., 2003). (*Evidence Grade = C*)
- Excessive noise exposure (Brookhouser, 1994; Mayo Clinic, "Hearing loss and risk factors," 2003; Morata, 1998; National Institutes of Health [NIH], 2005; Shone et al., 1991; Ward, 1995). (*Evidence Grade = C*)
- Use of ototoxic medications (Begg, Barclay, & Kirkpatrick, 2001; Mayo Clinic, "Hearing loss and risk factors," 2003; Palomar et al., 2001). (*Evidence Grade = C*)
- Males (Administration on Aging [AOA], 2004; Garstecki & Erler, 1999; Moscicki et al., 1985; NIH, 2005; Pearson et al., 1995). (*Evidence Grade = C*).

Assessment Criterion

Due to the high prevalence of hearing loss in nursing facility residents, all residents should be evaluated for hearing impairment ("Guidelines for audiology service," 1992; Bagai, Thavendiranathan, & Detsky, 2006; Lewsen & Cashman, 1997; Lindblade & McDonald, 1995; Wallhagen, Pettengill, & Whiteside, 2006). (*Evidence Grade = C*). All nursing facility residents should be screened and assessed for hearing impairment on admission and on an ongoing basis ("Guidelines for audiology service," 1992, American Speech-Language Hearing Association [ASHA], 1992; Centers for Medicare and Medicaid [CMS], 2003; Garahan et al., 1992; U.S. Department of Health and Human Services [USDHHS], 1989). (*Evidence Grade = C*).

Brief Description of Assessment Tools

Several bedside assessment tools are available for registered nurses to screen and assess for hearing impairment in nursing facility residents. The most common assessment instruments include:

- Hearing Handicap Inventory for the Elderly-Screening (HHIE-S) (See Appendix A.1 in the original guideline document)
- Nursing Home Hearing Handicap Index (NHHI) (See Appendix A.1 in the original guideline document)
- Minimum Data Set Assessment (MDS) (See Appendix A.2 in the original guideline document)
- Whisper test (See Appendix A.3 in the original guideline document)
- Rinne and Weber assessment tests (See Appendix A.4 in the original guideline document)
- Hand-Held Audioscope (See Appendix A.5 in the original guideline document)
- Otoscopic examination (See Appendix A.6 in the original guideline document)

Description of the Practice

All nursing facility residents should be screened and assessed for hearing impairment on admission and on an ongoing basis (CMS, 2003; Garahan et al., 1992; Newman, 1990). (*Evidence Grade = C*). A timeframe for this ongoing evaluation of nursing facility residents for hearing impairment should minimally coincide with the federally mandated MDS timelines (admission, significant change in status, or as needed, but minimally on an annual basis) (CMS, 2003; Hawes et al., 1997; Hopper et al., 2001). (*Evidence Grade = C*).

The **Hearing Impairment Nursing Screening Evaluation** in nursing facility residents should consist of:

- A thorough **history and physical exam** which are essential to the nursing diagnosis and treatment of hearing impairment (Abrams, Beers, & Berkow, 1995; Beers et al., 2005; Merck Manual of Geriatrics, 2005). (*Evidence Grade = D*). The history should involve asking older nursing facility residents and their family members whether they have a hearing problem (Bagai, Thavendiranathan, & Detsky, 2006; Gates et al., 2003; Isaacson, 2003; Sindhusake et al., 2001). (*Evidence Grade = C*). The history and physical shall minimally consist of:
    - **Self-Report Evaluation**
        - **Screening for hearing impairment with the MDS Section C** (CMS, 2003; Hawes et al., 1997). In addition, the Hearing Handicap Inventory for the Elderly-Screening or the Nursing Home Hearing Handicap Index are recommended for screening cognitively intact residents for hearing impairment (Abyad, 2004; Culbertson, Griggs, & Hudson, 2004; Hopper et al., 2001; Lichtenstein, Bess, & Logan, "Diagnostic," 1988, "Validation," 1988; USDHHS, 1998, 2005; Ventry & Weinstein, 1983). (*Evidence Grade = C*).
    - **Physiologic Evaluation**
        - **Examining the external auditory canal with an otoscope for cerumen, foreign bodies, and abnormalities.**
        - **Screening for hearing impairment with a Hand-Held Audioscope**. If a hand-held audioscope is not available, or if

the registered nurse completing the assessment has not been trained on the use of an audioscope, then screen for hearing impairment with the whispered voice test (Bagai, Thavendiranathan, & Detsky, 2006; Wallhagen, Pettengill, & Whiteside, 2006). (*Evidence Grade= C*).

- **Referring all residents with suspected hearing problems or abnormal screenings** for hearing impairment in a nursing facility to the primary care provider (PCP) to initiate interventions (cerumen management), a referral to an ear, nose and throat (ENT) physician and/or audiologist for audiometric evaluation, further hearing tests, hearing diagnosis, and hearing rehabilitation (Bagai, Thavendiranathan, & Detsky, 2006; Beers et al., 2005; Gates et al., 2003; Merck Manual of Geriatrics, 2005; Tolson & Stephens, 1997; Wallhagen, Pettengill, Whiteside, 2006). (*Evidence Grade = C*).

General Hearing Impairment Intervention Strategies

Hearing impairment affects millions of elderly and can directly impact their independence, communication skills, and functional abilities. Regardless of the etiology, hearing impairment has a profound effect on a nursing facility resident's communication abilities. Nursing facility staff can contribute to the physical and emotional well-being of residents with hearing impairments by becoming sensitive to their needs. Intervention strategies specific to sensorineural hearing impairment include effective communication and the management of hearing aids and assistive listening devices. The following communication strategies are a synthesis of recommendations found in the literature.

Communication Strategies

Note the resident's preferred communication method: (Bagley, 1998; Hines, 1997; Jupiter & Spivey, 1997; Kee & Miller, 1999; Mayo Clinic, "Hearing loss and coping skills," 2003; Sommer & Sommer, 2002; Vaughan et al., 2002). (*Evidence Grade = C*).

- This may be verbal, written, lip-reading, or sign language.
- This should be evident on the resident's plan of care available to all nursing personnel.
- Explore with resident, family, and or legal responsible party availability and process to acquire assistive listening devices and hearing aids if needed (telephone amplifier, speakerphone, portable amplifiers, or telecommunication devices for the deaf [TDD]) (Taylor, 1993). (*Evidence Grade = D*).

Gain the resident's attention first: (Bagley, 1998; Hines, 1997; Jupiter & Spivey, 1997; Kee & Miller, 1999; Lindblade & McDonald, 1995; Mayo Clinic, "Hearing loss and coping skills," 2003; McConnell, 2002; McCullagh, 2002; Sommer & Sommer, 2002; Vaughan et al., 2002; Verney, 1989). (*Evidence Grade = C*).

- Be sure the resident is aware of you before you start talking.
- If the resident is turned away from you or turns away from you, alert the resident with a gentle touch (Hollinger, 1986). (*Evidence Grade = D*).

Face the resident directly: (Bagley, 1998; Hines, 1997; Jupiter & Spivey, 1997; Lindblade & McDonald, 1995; Mayo Clinic, "Hearing loss and coping skills," 2003, "Hearing loss and risk factors," 2003; McConnell, 2002; McCullagh, 2002; Portis, 2005; Sommer & Sommer, 2002; Vaughan et al., 2002). (*Evidence Grade = C*).

- Be sure to look directly at the resident, preferably at eye level, before starting to speak.
- If the resident wears a hearing aid, make sure it is secure in the correct ear and turned on.
- Check for visual impairment; ask "can you read a newspaper" (Wallhagen et al., 2001). (*Evidence Grade = C*).
- If the resident wears glasses, ensure they are on and clean.
- The resident must be able to see you to hear you.
- Establish eye contact.
- Don't turn away in the middle of a sentence.

Spotlight your face: (Bagley, 1998; Hines, 1997; Jupiter & Spivey, 1997; Lindblade & McDonald, 1995; Mayo Clinic, "Hearing loss and coping skills," 2003; McCullagh, 2002; Sommer & Sommer, 2002; Vaughan et al., 2002; Wallhagen, Pettengill, & Whiteside, 2006). (*Evidence Grade = C*).

- Face a window or a lamp so the light illuminates your mouth as you speak.
- If the room is dark, move to another area with more lighting.
- Residents with hearing loss often rely heavily on lip reading.

Avoid noisy backgrounds: (Bagley, 1998; Hines, 1997; Jupiter & Spivey, 1997; Kee & Miller, 1999; Mayo Clinic, "Hearing loss and coping skills," 2003; McConnell, 2002; McCullagh, 2002; Sommer & Sommer, 2002; Vaughan et al., 2002). (*Evidence Grade = C*).

- A conversation is difficult to hear over background noises because the sound is coming from all sides. Ask the resident to sit with their back to the wall so the sound is not coming from all sides. Don't try to talk above loud noises, as this makes hearing worse (Larsby et al., 2005; Wallhagen, Pettengill, & Whiteside, 2006). (*Evidence Grade = D*).
- Ask residents to suggest things you can do to facilitate communication, such as speaking toward a better ear or moving to a better light.

Do not shout: (Bagley, 1998; Hines, 1997; Kee & Miller, 1999; Mayo Clinic, "Hearing loss and coping skills," 2003; McConnell, 2002; McCullagh, 2002; Sommer & Sommer, 2002; Vaughan et al., 2002). (*Evidence Grade = C*).

- Shouting makes hearing worse and may be painful to the resident.
- Shouting distorts the face of the speaker, and makes lip-reading difficult or impossible.
- Shouting, which is amplified by a hearing aid, can frighten and upset the resident.
- In addition, do not speak directly into the resident's ear, as this prevents the resident from using visual cues.

Communicate: (Bagley, 1998; Hines, 1997; Kee & Miller, 1999; Mayo Clinic, "Hearing loss and coping skills," 2003; McConnell, 2002; McCullagh, 2002; Sommer & Sommer, 2002; Vaughan et al., 2002). (*Evidence Grade = C*).

- Speak in a quiet environment, not farther than 2 to 3 feet from the resident.
- One person at a time should talk to the resident.
- Allow adequate time for the resident to listen and respond.
- Use the resident's first name, and then continue the sentence.
- Use gestures if you need to clarify a statement or question.
- Do not chew gum or cover your mouth when speaking.
- Do not hold anything in your teeth.
- Use written communication if you are unable to communicate verbally.

Speak clearly at a moderate pace: (Bagley, 1998; Hines, 1997; Larsby et al., 2005; Lindblade & McDonald, 1995; Mayo Clinic, "Hearing loss and coping skills," 2003, "Hearing loss and risk factors, 2003; McConnell, 2002; McCullagh, 2002; Sommer & Sommer, 2002; Vaughan et al., 2002; Wallhagen, Pettengill, & Whiteside, 2006). (*Evidence Grade = C*).

- Speak slowly and pause occasionally to help the resident keep up with the word flow.
- Enunciate each word carefully and avoid mumbling.
- Don't mouth expressions or exaggerate expressions, as this simply makes it more difficult for the resident to understand.
- Do not use a high pitch tone; use a lower, deeper voice.
- Do not use baby talk (Williams, Kemper, & Hummert, 2004). (*Evidence Grade = C*).

Give clues when changing subjects: (Bagley, 1998; Hines, 1997; Kee & Miller, 1999; Lindblade & McDonald, 1995; Mayo Clinic, "Hearing loss and coping skills," 2003, "Hearing loss and risk factors, 2003; McCullagh, 2002; Sommer & Sommer, 2002; Vaughan et al., 2002). (*Evidence Grade = C*).

- Do not change the subject without warning as it may confuse the hearing impaired resident.
- Keep the resident on track by saying something like, "*Now I want to talk to you about our upcoming family night*" so the resident can become ready for a new topic.

Use longer phrases: (Bagley, 1998; Hines, 1997; Kee & Miller, 1999; Lindblade & McDonald, 1995; Mayo Clinic, "Hearing loss and coping skills," 2003, "Hearing loss and risk factors, 2003; McCullagh, 2002; Sommer & Sommer, 2002; Vaughan et al., 2002). (*Evidence Grade = C*).

- Longer phrases tend to be easier for residents to understand and give more "meaning" clues than shorter phrases.
- For example, "*Will you get me a drink of water?*" presents less difficulty than "*Will you get me a drink?*"

Keep it simple. (Bagley, 1998; Hines, 1997; Lindblade & McDonald, 1995; Mayo Clinic, "Hearing loss and coping skills," 2003, "Hearing loss and risk factors, 2003;

McConnell, 2002; McCullagh, 2002; Sommer & Sommer, 2002; Vaughan et al., 2002). (*Evidence Grade = C*).

- Put terms in simple plain English (or primary language spoken); avoid slang.
- If the listener does not respond, rephrase the idea in short simple sentences.
- Evaluate or verify with the resident's response to what you have said or what you have written before you continue.

Beware of listener bluffing: (Bagley, 1998). (*Evidence Grade= D*).

- When it is too difficult to listen, some residents may agree with everything, even when they do not understand what is being said.

Care and Maintenance of Hearing Aids and Assistive Listening Devices

Hearing aids and assistive listening devices have been reported to significantly improve quality of life (Appollonio et al., 1996; National Council on the Aging [NCOA], 1999). (*Evidence Grade = C*). All nursing personnel (registered nurse [RN], licensed practical nurse [LPN], certified nursing assistant [CNA]) are responsible for the care and management of these devices, yet many nursing home staff have not received formal training regarding hearing aids and assistive listening devices and therefore have a lack of knowledge in proper care and management. Training nursing personnel on the use, care, and maintenance of hearing aids and assistive listening devices is vital to providing quality nursing care to residents with hearing impairment (Jennings & Head, 1997; Norwood-Chapman & Burchfield, 1999). (*Evidence Grade = C*).

Hearing Aid: Use, Care, and Maintenance. A hearing aid is a battery-powered, sound-amplifying device used by residents with hearing impairment. It consists of a microphone that picks up sound and converts it to electric energy, an amplifier that magnifies the electric energy electronically, a receiver that converts the amplified energy, and an ear mold that directs the sound into the ear (Berman et al., 2002). (*Evidence Grade = D*). For proper functioning, it is necessary that nurses and nursing assistants handle the hearing aid appropriately during insertion, removal, regular cleaning, and during replacement of dead batteries.

There are several different types of hearing aid devices. A common type is the behind-the-ear (BTE or postaural) aid. This type fits snugly behind the ear and the hearing aid case holds the microphone and amplifier, with the receiver attached to the earmold by a plastic tube. Another type widely used is the in-the-ear (ITE or intra-aural) aid. This is a one-piece aid and has all the components within the earmold. Other hearing aid devices include: in-the-canal (ITC) aid, completely in-the-canal (CIC), eyeglasses aid, and body hearing aid (American Academy of Audiology, 2002; Berman et al., 2002; Wallhagen, Pettengill, & Whiteside, 2006). (*Evidence Grade = D*). Follow the manufacturer's specific guidelines for proper hearing aid use, care, and maintenance.

General techniques for hearing aid care: (Berman et al., 2002; Brinkman, 1991; Geronurse Online, 2005; Nelson, 1994; Wallhagen, Pettengill, & Whiteside, 2006). (*Evidence Grade= D*).

Remove the hearing aid.

- Turn the hearing aid off and then lower the volume. The on/off switch may be represented by an "O" (off), "M" (microphone), "T" (telephone), or "TM" (telephone/microphone). If the hearing aid is not turned off, the batteries will continue to run.
- Remove the earmold by rotating it slightly forward and then pulling it outward.
- Remove the battery if the hearing aid will not be used for several days. This prevents corrosion of the hearing aid from battery leakage.
- Store the hearing aid in a safe place away from heat and moisture. Safe storage prevents loss or damage.

Clean the earmold.

- Detach the earmold as indicated. Disconnect the earmold from the receiver of a body hearing aid, or from the hearing aid case of a behind-the-ear or eyeglasses hearing aid where the tube meets the hook of the case. Do not remove the earmold if it is glued or secured. Removal helps in cleaning and prevents damage to the hearing aid.
- If the earmold is detachable, soak it in a mild soapy solution. Clean the earmold and then with a soft cloth, rinse and dry. Do not use isopropyl alcohol, solvents, or oil. Alcohol may cause damage to the hearing aid.
- If the earmold is not detachable or is for an in-the-ear aid, clean the earmold with a damp cloth.
- Check that the earmold opening is patent. Remove any excess moisture or debris with a soft cloth or cotton ball.
- Reattach the earmold to the rest of the hearing aid.

Insert the hearing aid.

Determine from the resident if the earmold is for the left or the right ear.

- Check for correct battery placement. Assure the hearing aid is turned off and the volume is turned down.
- Line up the parts of the earmold with the resident's ear.
- Slightly rotate the earmold forward, and insert the ear canal portion.
- Gently press the earmold into the ear while rotating it backward.
- Check that the earmold fits snugly by asking the resident if it feels secure and comfortable.
- Adjust the other components of the hearing aid as applicable (behind-the-ear or body hearing aid).
- Turn the hearing aid on, and adjust the volume according to the resident's needs.

Troubleshoot problems associated with improper functioning.

- If the sound is weak or absent:
    - Ensure that the volume is turned up.
    - Ensure that the earmold opening is not clogged. If the opening is clogged, gently push it out with a pin or pipe cleaner. If the hearing aid is one that sits in the ear, the receiver opening is lined with a piece

of tubing that can easily be mistaken for cerumen. The resident should have a little tool called a wax loop, which should be used to remove the cerumen.
    - Check the battery by turning the hearing aid on, turning up the volume, cupping your hand over the earmold, and listening. A constant whistling sound indicates the battery is functioning. A weak sound may indicate that the battery is losing power. Replace the battery as necessary. Be sure that the negative and positive signs on the battery match those indicated on the hearing aid. Be sure the new battery fits snugly but comfortably into its compartment. If there is resistance, either it is the wrong size or you are inserting it the wrong way. It may be helpful to keep a battery tester at the nurses' station, as well as a list of the residents who wear hearing aids and the type and size of battery they need.
    - Ensure that the ear canal is not blocked with cerumen.
- If the resident reports a whistling sound or squeal after insertion:
    - Turn the volume down
    - Ensure that the receiver is properly attached to the earmold.
    - Try reinserting the earmold.

Refer to the resident's audiologist if any problems persist or if difficulties cannot be corrected by the above. Document pertinent data including any problems the resident has with the hearing aid. In addition, daily care and maintenance may be recorded on a flowsheet. Hearing aid insertion and removal times of each resident may be included on the flowsheet.

Assistive Listening Devices: Use, Care, and Maintenance. Assistive listening devices (ALDs) are any type of device other than hearing aids, used to assist someone who is hearing impaired to hear better and function better in day to day communication. Assistive listening devices are appropriate for elderly people with mild to moderate hearing loss because these devices can provide satisfactory auditory function even without the use of a hearing aid. In addition, ALDs may be used with hearing aids; and when used with hearing aids, they may tune out bothersome background noise (Jerger et al., 1996). (*Evidence Grade = C*). Unfortunately, hearing impaired people often resist using these visual devices (ASHA, 2005; Bagley, 1998; Baumfield, Hickson, & McPherson, 1993; Cream & Teaford, 1999; Flexer & Savage, 1992; Jupiter & Spivey, 1997; Lewis et al., 2003). (*Evidence Grade = D*). The following are examples of the more common types of categories of ALDs:

- **Pocket Talker (ALD) or Hardwire Devices**: Comprised of a microphone that the speaker talks into, an amplifier to make the sounds louder, and a wire leading to the earphones worn by the resident. The earphones have adjustable volume. These types of ALDs are simple to use, and appropriate for one on one conversation, TV, and radio listening. However, due to the wire connection, this type of ALD may be too restrictive for large group conversations.
- **Personal Frequency Modulation (FM) ALD**: The speaker wears a small microphone and signals are transmitted along a radio frequency carrier wave to the amplifier which is worn by the resident. The frequency modulation system can be used for personal use or in larger areas.

- **Infrared Systems (ALD)**: In the infrared system a microphone picks up the energy from the speaker, converts it, and transmits it to an infrared converter. The converter transmits the signal on an infrared carrier beam. The listener wears a receiver which looks like lightweight earphones. This type of system allows the resident to be involved in group activities or to watch TV in a lounge area. This type of system cannot be used in direct sunlight.
- **Induction Loop Systems (ALD)**: The induction loop system consists of a microphone, an amplifier, and a wire that surrounds a designated area. A microphone is placed near the speaker and the signal is transmitted to the wire, which then transforms the signal and is picked up by the hearing aid. Fluorescent lighting may cause interference and the resident must be sitting within the area of the loop.
- **Other ALDs**: Telephone amplifiers, amplified answering machines, paging systems, computers, and wake-up alarms.

Routine Maintenance and Placement Procedures for Pocket/Personal ALDs (Erber, 1994) (*Evidence Grade = D*)

- Determine that the amplifier and batteries are working properly. Put the earphones on and listen to your own speech before putting the headphones on the resident.
- Put the earphones on the resident, and adjust the headband for comfort and fit.
- Stand/sit about 3 feet (or less) from the resident. Be sure that you are facing the main source of light (e.g., the window).
- Hold the amplifier in your hand under your chin. Talk across (not into) the microphone at a distance of approximately 2 inches. Be sure that the hearing-impaired resident can see your mouth easily.
- Speak in a normal voice. Do not shout.
- Be sure to switch off the amplifier when you are finished.

Cerumen Management

One common, reversible cause of conductive hearing loss is impacted cerumen in the external auditory canal (Larsen, 1976; Lewis-Cullinan & Janken, 1990; Mahoney, 1987, 1993; Meador, 1995; Ney, 1993; Rodgers, 2002). Cerumen impaction obstructs sound transmission and can cause up to a 40 to 45 dB loss (Zivic & King, 1993). The estimated incidence of cerumen impaction in nursing home residents is nearly 40% (Freeman, 1995). (*Evidence Grade = D*). Based on the prevalence of cerumen impaction among the elderly and those residing in nursing home facilities, greater attention to detection and removal of impacted cerumen is needed (Lewis-Cullinan & Janken, 1990; Moore et al., 2002; Ney, 1993). (*Evidence Grade = C*).

Risk factors for cerumen impaction in residents include (Freeman, 1995; Mahoney, 1987; Zivic & King, 1993). (*Evidence Grade = D*):

- Numerous ear-canal hairs
- Use of hearing aides
- Benign bony growths secondary to osteophyte or osteoma
- History of repeated problems with impacted cerumen.

Recommended aural hygiene involves cleaning the auricles of the ear and removing excessive cerumen that is visible (Berman et al., 2002; Ney, 1993). (*Evidence Grade = D*). The use of cotton-tipped applicators to cleanse the external canal is discouraged because this often pushes the cerumen deeper into the canal, as well as poses a risk for injury to the canal walls and tympanic membrane (Berman et al., 2002; Hooper, 1991; Ney, 1993; Zivic & King, 1993). (*Evidence Grade = D*). If routine aural hygiene is ineffective or cerumen becomes impacted causing discomfort or hearing difficulty, irrigation may be necessary. Cerumen removal is indicated when cerumen blocks the external auditory canal, resulting in hearing loss, pain, or infection (Berman et al, 2002; Freeman, 1995). (*Evidence Grade = D*). Methods to remove cerumen impactions include ceruminolytic agents, curette methods, and aural lavage/irrigation. Removal must be performed by a trained registered nurse with a physician's order (Cook, 1998; Grossan, 1998; Rodgers, 1997; Stubbs, 2000; Thurgood & Thurgood, 1995). (*Evidence Grade = D*).

Ceruminolytic Agents

Ceruminolytic agents soften and loosen cerumen impactions. The use of a ceruminolytic agent may be helpful prior to lavaging the ears of residents with persistent cerumen plugs (Burkhart et al., 2000; Wilson & Lopez, 2002; Ney, 1993; Zivic & King, 1993). (*Evidence Grade = C*.) Many non-prescriptive and prescriptive ceruminolytic agents are available. To ease or eliminate the need for irrigation, a presoak with docusate sodium (Colace) was found to be most effective (Singer, Sauris, & Viccellio, 2000). (*Evidence Grade = B*). Both trithanolamine (Cerumenex) and olive oil were the next most effective in treating cerumen impactions (De Saintonge & Johnstone, 1973). (*Evidence Grade = B*). Carbamide peroxide (Debrox, Murine Ear) was the least effective (Amjad & Scheer, 1975). (*Evidence Grade = C*). Harm done by wax softeners is minimal (Wilson & Lopez, 2002). (*Evidence Grade = D*).

Aural Lavage/Irrigation

Impacted cerumen is a common condition in older adults, and ear canal irrigations are effective in restoring hearing ability (Lewis-Cullinan & Janken, 1990). (*Evidence Grade = C*). Although ear irrigations are reportedly a common procedure for cerumen management (ASHA, 2002; Dinces, 2006; Sinclair, 2005; Wallhagen, Pettengill, & Whiteside, 2006) it is invasive and has the potential to cause discomfort or even injury to the resident. Achieved competency in aural lavage/irrigation by the registered nurse is necessary prior to the procedure. It is imperative that the registered nurse be able to safely conduct a thorough ear exam and perform aural lavage/irrigation based on knowledge of the procedure, indications, and precautions.

Aural lavage is contraindicated

- If the resident has a perforated tympanic membrane, acute or chronic otitis media, otitis externa, myringotomy tubes, or a mastoid cavity (Cook, 1998; Lewis-Cullinan & Janken, 1990; Thurgood & Thurgood, 1995; Zivic & King, 1993). (*Evidence Grade = D*). Residents with any of these conditions should be referred to an ENT physician for cerumen removal (Meador, 1995). (*Evidence Grade = D*)

- If the cerumen has completely occluded the canal the nurse should make a referral (Zivic & King, 1993). (*Evidence Grade = D*)
- For residents with only a single hearing ear that presents with cerumen impaction, the resident should be taken care of by an ENT physician (Davidson, 2000). (*Evidence Grade = D*)

Complications that may occur with irrigation include otitis externa, perforation, canal trauma, pain, cough, tinnitus, vertigo, and otitis media (Ford & Courtney-Harris, 1990; Grossan, 1998; Sharp et al., 1990; Zivic & King, 1993). (*Evidence Grade = D*).

Irrigation techniques for cerumen removal were described as follows (Ballachanda & Peers, 1992; Berman et al., 2002; Burgess, 1977; Carne, 1980; Cook, 1998; Grossan, 1998, 2000; Ignatavicius & Workman, 2006; Lewis-Cullinan & Janken, 1990; Lueckenotte, 2000; Mahoney, 1993; Meador, 1995; Ney, 1993; Rodgers, 1997; Sinclair, 2005; Sharp et al., 1990; Stubbs, 2000; Thurgood & Thurgood, 1995; Webber-Jones, 1992; Wilson & Rodgers, 2000; Zivic & King, 1993). (*Evidence Grade = D*):

- Obtain a history. Assess for a history of perforated tympanic membrane and chronic otitis media, myingotomy tubes, or a mastoid cavity. If any are reported, a referral should be made to an otolaryngologist (ENT physician).
- Inspect the ear for lesions or discharge. Palpate around the ear and move the auricle up and down to assess for tenderness indicating otitis externa.
- Examine the ear with an otoscope. Visualize the tympanic membrane and proceed if the membrane is intact and there are no signs of infection. If any foreign bodies or abnormalities are found, refer to an ENT physician.
- Gather the proper equipment: basin, irrigating device (20 to 50 cc syringe or a commercial irrigator), and towel.
- Explain the procedure to the resident, and instruct the resident not to make any sudden movement to avoid trauma to the ear. Advise the resident to report pain, vertigo, or nausea.
- Check the temperature of the irrigating fluid. The temperature should be body temperature or 37 degrees C to reduce the chance of stimulating the vestibular sense. The base irrigant is water. Additives may be prescribed.
- Cover the resident's shoulder with a towel.
- Place a basin under the ear to be irrigated and position the affected ear dependent to facilitate drainage of the irrigant solution.
- Use an otoscope to check the location of the impacted cerumen.
- Place the tip of the syringe at an angle so that the fluid pushes upward and to one side and not directly on the impaction. This helps to loosen the impaction instead of forcing it further into the canal.
- The tip of the irrigating device should be placed just inside (no more than 8 mm) the external meatus so that the tip is visible. Straighten the external auditory meatus by gently drawing the pinna up and back. Direct the fluid upward in the canal.
- The flow of the irrigating fluid should be gentle.
- The amount of irrigating fluid should be in accordance to the irrigating device's manufacturing guidelines.
- Watch the fluid return for signs of cerumen plug removal.
- If the resident complains of pain, nausea, or vertigo, stop the irrigation immediately.

- Examine the ear canal and tympanic membrane periodically throughout the irrigation for effectiveness of treatment.
- After irrigation, examine the ear canal with an otoscope for tympanic membrane patency or cerumen plug.
- Drain excessive fluid from the ear by tilting the head toward the affected side.
- Following irrigation, dry the auricle and external canal with a cotton ball.
- If the cerumen cannot be removed by irrigation, the physician should be notified. A ceruminolytic agent may be ordered to soften dry, impacted cerumen, after which irrigation may be repeated as prescribed by the physician.
- Refer to audiologist and/or ENT physician as indicated.
- Educate the resident about ear care.
- Document the cerumen removal, noting the status of the tympanic membrane and ear canal prior to and after the procedure.

Resident education is important and should include the following (Zivic & King, 1993). (*Evidence Grade = D*):

- Instruct the resident to clean ears with a damp washcloth wrapped around a finger.
- Caution not to introduce foreign objects, such as cotton-tipped applicators, bobby pins, and paper clips, into the ear canal.
- Instruct residents that they should report to the nurse if they experience pain, ringing, a decrease in hearing, or a crackling noise in the ear.

Curette Method

A physician or an advanced practice nurse is usually responsible for the removal of impacted cerumen when it is necessary through a curette under direct vision (Ney, 1993). (*Evidence Grade = C*).

Definitions:

A. Evidence from well-designed meta-analysis.
B. Evidence from well-designed controlled trials, both randomized and nonrandomized, with results that consistently support a specific action (e.g., assessment, intervention or treatment).
C. Evidence from observational studies (e.g., correlational descriptive studies) or controlled trials with inconsistent results.
D. Evidence from expert opinion or multiple case reports.

CLINICAL ALGORITHM(S)

A clinical algorithm is provided in the original guideline document for nursing management of hearing impairment in nursing facility residents.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Accurate assessment and management of hearing impairment, which may lead to improved hearing, functional ability, and quality of life

POTENTIAL HARMS

- Although ear irrigations are reportedly a common procedure for cerumen management it is invasive and has the potential to cause discomfort or even injury to the resident.
- Complications that may occur with irrigation include otitis externa, perforation, canal trauma, pain, cough, tinnitus, vertigo, and otitis media

CONTRAINDICATIONS

CONTRAINDICATIONS

Aural lavage is contraindicated

- If the resident has a perforated tympanic membrane, acute or chronic otitis media, otitis externa, myringotomy tubes, or a mastoid cavity Residents with any of these conditions should be referred to an ear, nose and throat (ENT) physician for cerumen removal
- If the cerumen has completely occluded the canal the nurse should make a referral
- For residents with only a single hearing ear that presents with cerumen impaction, the resident should be taken care of by an ear, nose and throat physician

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This is a general evidence-based practice guideline. Patient care continues to require individualization based on patient needs and requests.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Process Indicators

Process indicators are those interpersonal and environmental factors that can facilitate the use of a guideline. One process factor that can be assessed with a sample of nurses (registered nurses [RNs], licensed practical nurses [LPNs], and certified nursing assistants [CNAs]) is knowledge about hearing impairment in nursing facility older adults. **The Hearing Impairment Knowledge Assessment Test** (See Appendix B in the original guideline document) should be administered before and following the education of staff regarding use of this guideline.

The same sample of nursing staff to which the Knowledge Assessment Test was given should also be given the **Process Evaluation Monitor** (See Appendix C in the original guideline document) approximately one month following use of the guideline. The purpose of this monitor is to determine understanding of the guideline and to assess the support for carrying out the guideline.

Outcome Indicators

Outcome indicators are outcomes expected to change or improve with consistent use of the guideline. The major outcome indicators that should be monitored over time are:

1. Residents are screened/assessed on admission, quarterly, and with significant change for hearing impairment.
2. Residents with hearing impairment are treated and referred to an ear, nose and throat (ENT) physician and/or audiologist.
3. Residents with hearing impairment receive appropriate nursing interventions.

The Hearing Impairment Monitor described in Appendix D in the original guideline document is to be used to monitor and evaluate the usefulness of the Hearing Impairment guideline in improving outcomes of older adults with hearing impairment who reside in nursing facilities.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators
Chart Documentation/Checklists/Forms
Clinical Algorithm
Resources
Staff Training/Competency Material

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Adams-Wendling L, Pimple C. Nursing management of hearing impairment in nursing facility residents. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; 2007 Jun. 56 p. [172 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2007 Jun

GUIDELINE DEVELOPER(S)

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SOURCE(S) OF FUNDING

Developed with the support provided by Grant #P30 NR03979, [PI: Toni Tripp-Reimer, The University of Iowa College of Nursing], National Institute of Nursing Research, NIH

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Not stated

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Not available at this time.

Print and CD-ROM copies: Available from the University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core, 4118 Westlawn, Iowa City, IA 52242. For more information, please see the University of Iowa Gerontological Nursing Interventions Research Center Web site.

AVAILABILITY OF COMPANION DOCUMENTS

The appendices to the original guideline document contain a number of implementation tools, including assessment tools, a staff knowledge assessment test, and process and outcomes evaluation monitors.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI Institute on August 30, 2007. The information was verified by the guideline developer on September 17, 2007.

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Date Modified: 9/15/2008